

**SOAH DOCKET NO. 582-22-0844**  
**TCEQ DOCKET NO: 2021-1000-MSW**

**IN THE MATTER OF THE  
APPLICATION BY DIAMOND BACK  
RECYCLING AND SANITARY  
LANDFILL, LP FOR NEW MSW  
PERMIT NO. 2404**

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**BEFORE THE STATE OFFICE**

**OF**

**ADMINISTRATIVE HEARINGS**

**EXHIBIT KNOX-201**

**LAWRENCE G. DUNBAR, P.E.**  
Water Resources/Environmental Engineer/Consultant  
6342 Dew Bridge Drive  
Sugar Land, TX 77479  
281-980-2225  
713-782-5544 (fax)

## **EDUCATION**

B.S. - University of Notre Dame  
1975 - Civil Engineering

M.S. - Illinois Institute of Technology  
1981 - Environmental Engineering

J.D. - University of Houston  
1989 - Law

## **WORK HISTORY**

1988 to Present - Lawrence G. Dunbar, P.E. (Houston, TX)  
Water Resources/Environmental Engineering Consultant

1986 to 1988 - Espey Huston & Associates (Houston, TX)  
Water Resources Group Leader

1984 to 1985 - State of Indiana (Indianapolis, IN)  
Section Head of Dam Inspection and Lake Permitting

1983 to 1984 - Espey Huston & Associates (Austin, TX)  
Water Resources Engineer

1981 to 1982 - Keifer Engineer, Inc. (Chicago, IL)  
Water Resources Engineer

1975 to 1981 - U.S. Army Corps of Engineers (Chicago, IL)  
Flood Control Section Chief, Hydrology and Hydraulics Branch

## **FIELDS OF EXPERIENCE**

Flood Control	Water Quality
Drainage	Wetlands
Stormwater Management	Landfills
Floodplain Analysis/Management	Land Development
Reservoir Regulation	Coastal Engineering
Stream Hydrology/Hydraulics	Unsteady Flow Modeling
Watershed Modeling	Water/wastewater systems
Flood Forecasting	

## **PROFESSIONAL ACTIVITIES**

Licensed Professional Engineer in Texas since 1983 (previously in Illinois and Indiana)

## **TECHNICAL PUBLICATIONS**

“Hydrologic and Hydraulic Analyses for a Major Urban Flood Control Study”  
Proceedings of the International Symposium on Urban Hydrology, Hydraulics and  
Sediment Control, Lexington, Kentucky, July 1982

“Hydrologic Methodology for Evaluating Urban Development”  
National Water Conference, Univ. of Delaware, July 1989

## EXPERIENCE EXAMPLES

Technical expert for Corps of Engineers on Lake Michigan Diversion lawsuit between Illinois and Wisconsin before the U.S. Supreme Court

Consulting expert for the State of Georgia in a water rights dispute between Georgia and Florida before the U.S. Supreme Court

Expert witness in numerous judicial and administrative proceedings on behalf of cities, counties, developers, engineers, and land owners regarding water resource/environmental engineering issues

Project manager of Corps of Engineers' review and permitting of Chicago's \$2B Deep Tunnel Project to control storm water/waste water discharges

Project manager for flood control project in Manila, Philippines

Project manager for land development projects in Austin, Texas

Project manager for development of Master Drainage Plans and the Drainage Criteria Manual for Fort Bend County

Project manager for the SSPEED Center at Rice University studying coastal surge protection systems and riverine flooding issues

Frequent seminar speaker throughout Texas on current issues involving storm water regulations

Consultant to various water, utility and drainage districts

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## Figure 1 – Application Figure III.C1.1 with Notations

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**EXHIBIT KNOX-203**

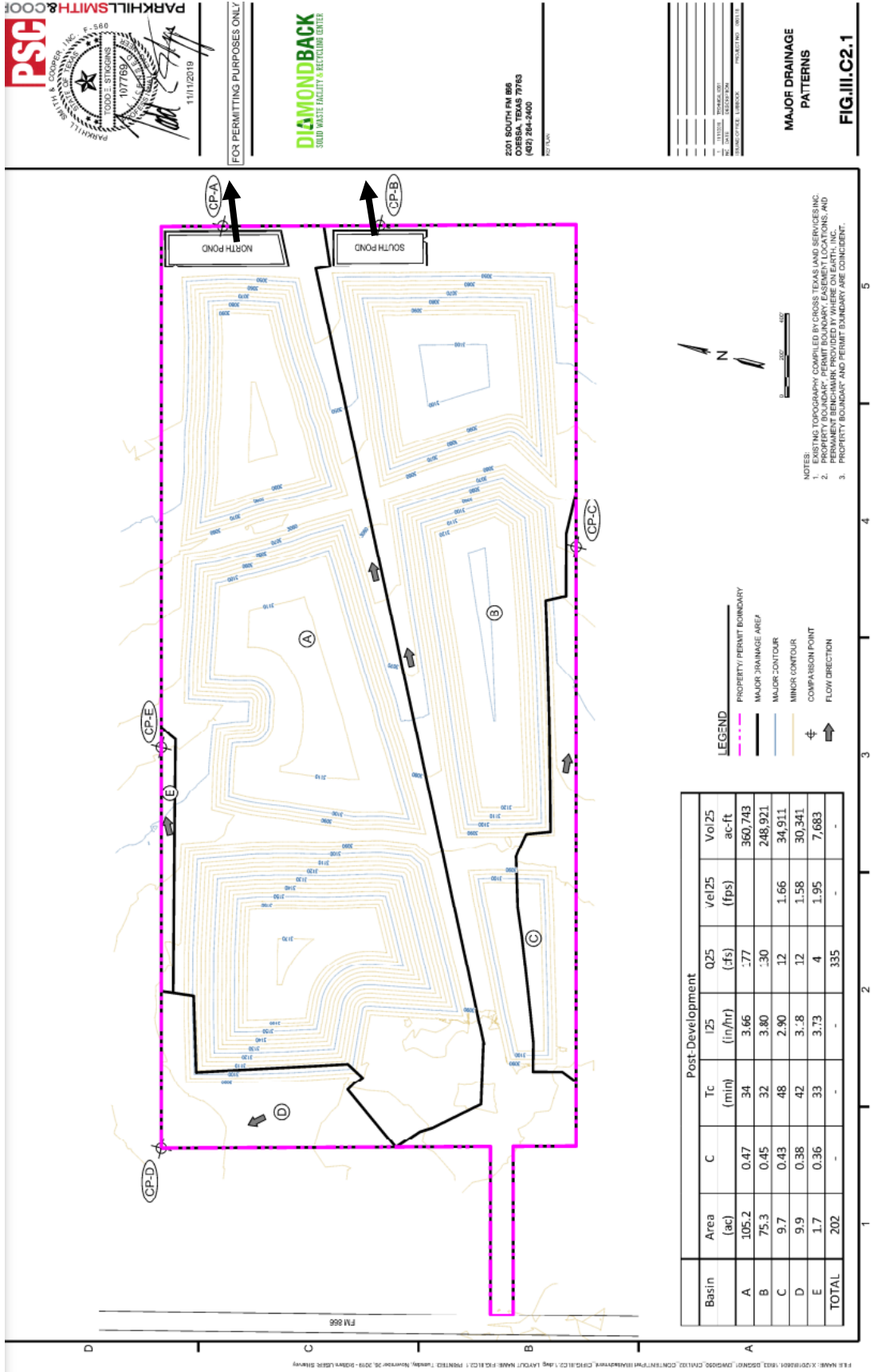


Figure 2 – Application Figure III.C2.1 with Notations

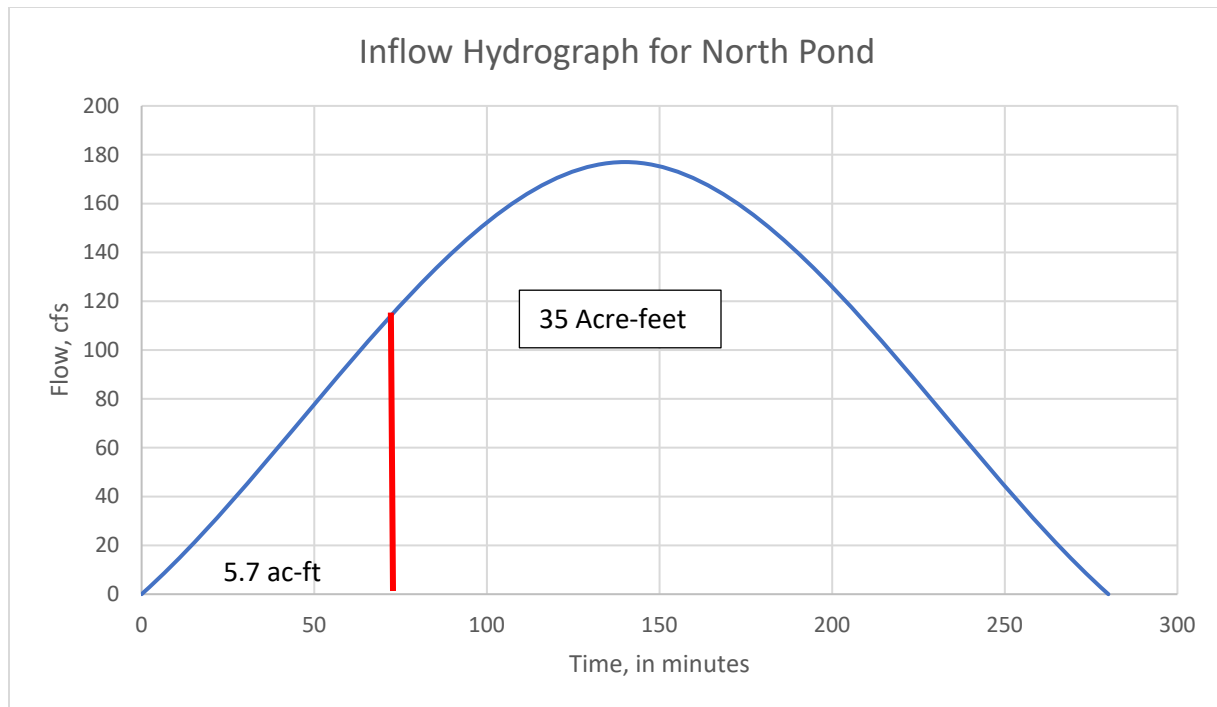
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**EXHIBIT KNOX-204**

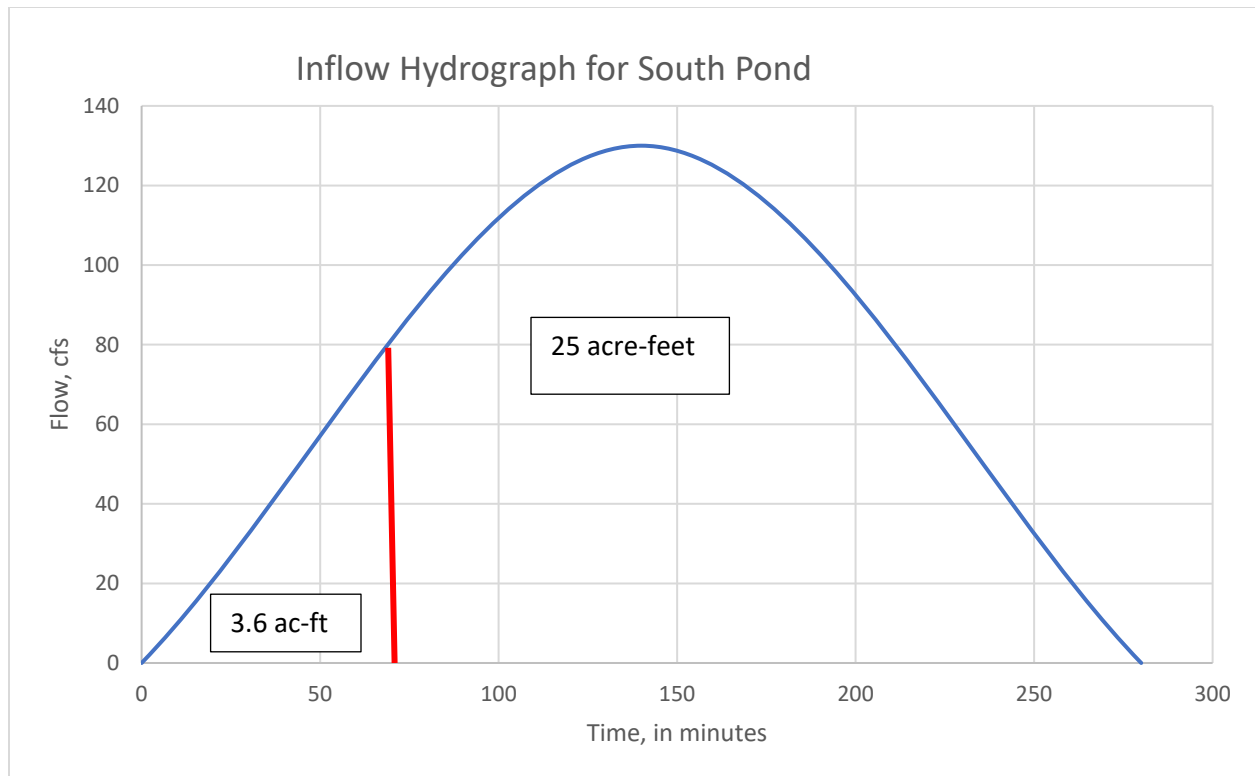


**Figure 3. Inflow Hydrograph for North Pond with Detention Storage Provided Filled Up**

**Drainage Area A** - 103.9 acres  
**Peak flow (25-yr)** - 177 cfs  
**25-yr, 24-hr rainfall** - 4.75 inches (assume 85% becomes runoff from the landfill)  
**25-yr, 24-hr runoff** - 4.0 inches (4.75" of rain x 85%) or 0.33 feet  
**Inflow Volume** - 35 acre-feet (103.9 acres x 0.33 feet of runoff volume)

**Detention Storage Capacity/Volume Provided** - 5.7 acre-feet

Detention storage capacity/volume provided is used up in about 70 minutes, less than half of the time before the peak inflow of 177 cfs enters the filled up pond. This means that there is little detention being provided to reduce the peak inflow down to the existing conditions rate, such that this pond will discharge most of the peak inflow of 177 cfs, and not the 65 cfs reported by the Applicant.



**Figure 4. Inflow Hydrograph for South Pond with Detention Storage Provided Filled Up**

**Drainage Area A** - 75.6 acres  
**Peak flow (25-yr)** - 130 cfs  
**25-yr, 24-hr rainfall** - 4.75 inches (assume 85% becomes runoff from the landfill)  
**25-yr, 24-hr runoff** - 4.0 inches (4.75" of rain x 85%) or 0.33 feet  
**Inflow Volume** - 25 acre-feet (75.6 acres x 0.33 feet of runoff volume)

**Detention Storage Capacity/Volume Provided** - 3.6 acre-feet

Detention storage capacity/volume provided is used up in about 70 minutes, less than half of the time before the peak inflow of 130 cfs enters the filled up pond. This means that there is little detention being provided to reduce the peak inflow down to the existing conditions rate, such that this pond will discharge most of the peak inflow of 130 cfs, and not the 54 cfs reported by the Applicant.